

Installation and Start-Up Instructions

SAFETY CONSIDERATIONS

Installing and servicing air conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install or service air conditioning equipment.

Untrained personnel can perform basic maintenance, such as cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on air conditioning equipment, observe precautions in literature and on tags and labels attached to unit.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions *thoroughly*. Consult local building codes and National Electrical Code (NEC) for special installation requirements.

⚠ WARNING

Before installing or servicing unit, turn off main power to system. There may be more than one disconnect switch. Turn off accessory heater power if applicable. Electrical shock can cause personal injury.

INSTALLATION

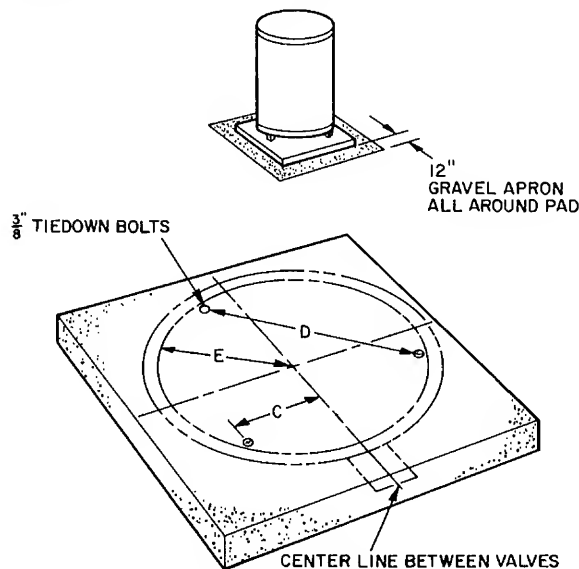
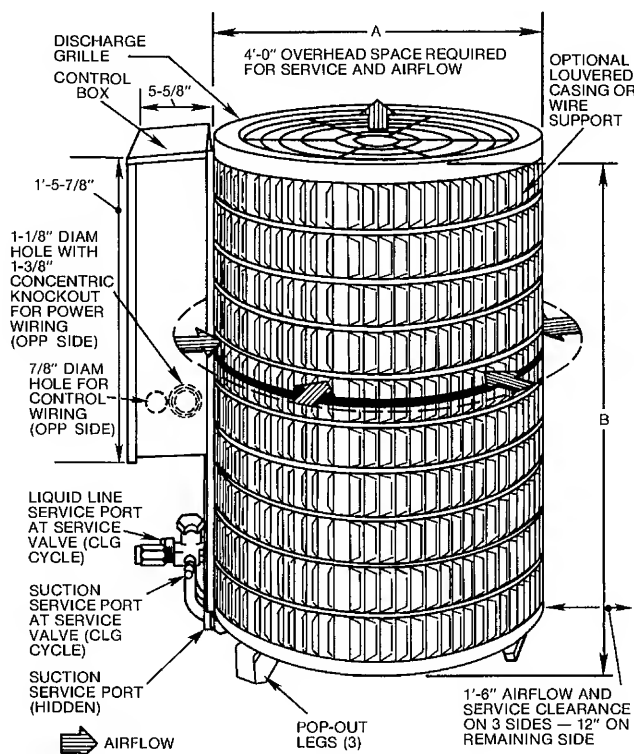
Step 1 — Check Equipment and Jobsite — Install on a solid, level mounting pad. It is recommended that unit be attached to pad using tiedown bolts. Fasten unit to pad using holes provided in unit mounting feet. See Fig. 1.

When installing, allow sufficient space for airflow clearance, wiring, refrigerant piping and servicing. Maintain a minimum of 4 ft clearance from obstructions above and 18 in. on 3 sides of unit (12 in. on fourth side). Maintain a distance of 24 in. between heat pumps. Position so water or ice from roof or eaves cannot fall directly on unit.

Step 2 — Replace AccuRater™ Refrigerant Control Piston in the indoor coil, *if required*, before connecting refrigerant lines. See AccuRater Selection Charts, Table 2.

Step 3 — Make Piping Connections — Outdoor units may be connected to indoor sections using Carrier accessory tubing package (refer to Service data) or field-supplied tubing of refrigerant grade, correct size and condition (Table 1). For tubing requirements beyond 50 ft, obtain information from local Carrier distributor.

Outdoor units connected to Carrier-approved indoor units contain correct system refrigerant charge for operation with indoor unit of the same size when connected by 25 ft of field-supplied or Carrier accessory tubing. Check refrigerant charge for maximum efficiency (refer to Table 5 and Service data).



NOTE Mounting pad may be square or circular

MODEL 38QH	015,018	024-048	060
DIAMETERS (ft-in.)	1-9½	2-5¼	3-3
SQUARES (Minimum) (in.)	23	30	40
TIEDOWN BOLT LOCATION (ft-in.)	C 0-6¼ D 1-4 E 0-9¼	0- 9½ 1-10½ 1-1	1-1½/16 2-7 1-5½

Fig. 1 — Dimensions, Connections and Mounting Pad (Refer to Table 1)

Table 1 — Physical Data

MODEL 38QH	015	018	024	030	036	042	048	060
OPER WT (lb)*	132	145	180	195	195	235	235	270
REFRIGERANT Control	22 AccuRater™ (Bypass Type)							
COND FAN	Propeller Type, Direct Drive							
Air Discharge	Vertical							
Air Qty (Cfm)	1850		3100		4000		5000	
Mtr Rpm (60 Hz)	830		850		840			
COND COIL (Fin/in.)	16 ½-in E-Coil							
Tube Diam	1							
Rows	2							
Refrig Ckts	4							
Face Area (sq ft)								
Outer Row	12.37		17.11		17.11		21.88	
Inner Row	—		—		17.11		21.88	
DIMENSIONS (ft-in.)								
Diameter	A 1-9½							
Height	B 2-5¼ 2-7							
CONNECTIONS (In. ODF)	Compatible Fitting (Suction) & Flare (Liquid)							
Suction Liquid	¾	1	¾	¾	¾	¾	¾	¾
REFRIG LINES (In. ODF)								
Suction Liquid	¾	¾	¾	¾	¾	¾	1½†	1½†

*Add 10 lbs for louvered casing (if so equipped). Weight increases slightly with addition of any accessories.

†38QH042-060 require 1½-in. suction line for optimum performance. A ¾- x 1½-in. connection adapter accessory (Carrier Part No. 28AU900061) is available. If a ¾-in. accessory tubing package is used, expect a 2½% capacity loss.

⚠ CAUTION

DO NOT BURY MORE THAN 3 FT OF REFRIGERANT TUBING IN GROUND. If any section of tubing is buried, there must be a 6-in. vertical rise to valve connections on outdoor unit. If more than the recommended length is buried, refrigerant may migrate to cooler buried section during extended periods of unit shutdown. This causes refrigerant slugging and possibly compressor damage at start-up.

CONNECT REFRIGERANT LINES to fittings on outdoor unit suction and liquid service valves (Fig. 1). Unit Compatible Fittings permit mechanical (quick-connect) or sweat connections.

Models 38QH042,048,060 — When using 1-1/8 in. field-supplied refrigerant suction line, sweat-connect suction line to 1-1/8 in. end of required connection adapter. Be sure to provide a heat sink at the service valve to prevent damage during sweating operation. Connect 3/4-in. end of adapter to unit suction line Compatible Fitting. Connect liquid refrigerant line to unit. When a 7/8-in. field-supplied suction line is used, provide a field-supplied 3/4-in. to 7/8-in. suction line adapter (not necessary if 38LS accessory tubing is used).

Mechanical Connection — Mate one set of connections at a time.

- Loosen nut on Compatible Fitting one turn. Do not remove.
- Remove plug and be sure O-ring is in the groove inside the Compatible Fitting.
- Cut tubing to correct length. Deburr and size as necessary.

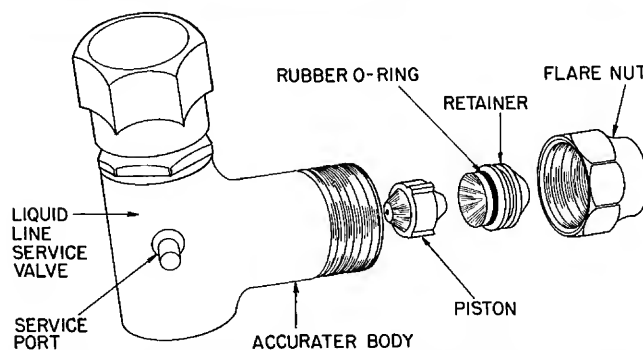


Fig. 2 — AccuRater (Bypass Type) Components

- Insert tube into Compatible Fitting until it bottoms. *Tighten nut until it bottoms on shoulder of fitting or valve. Keep tube bottomed in Compatible Fitting while tightening nut.*

⚠ CAUTION

If undersized, damaged or elliptically-shaped tubing is used when making Compatible Fitting, leaks may result.

Sweat Connection — Use refrigerant grade tubing.

- Remove locking nut, rubber O-ring and Schrader core and cap from valve service port.
- Cut tubing to correct length. Deburr and size as necessary.
- Insert tube in Compatible Fitting until it bottoms.

NOTE: Wrap top and bottom of service valves in wet cloth to prevent damage by heat. Solder with low-temperature 430 F silver alloy solder.

- Replace Schrader core and cap.
- Evacuate or purge system with field-supplied refrigerant.

Compatible Fitting Repair

MECHANICAL CONNECTION — Frontseat unit service valves. Relieve refrigerant pressure from tubing. Back off locknut from Compatible Fitting onto tube. Cut fitting between threads and O-ring. See Fig. 3. Remove tubing section remaining in threaded portion of fitting. Discard locknut.

Clean, flux and insert new tube end into remaining portion of Compatible Fitting. *Wrap valve in wet rag to prevent damaging factory-made joints.* Heat and apply low-temperature (430 F) solder.

SWEAT CONNECTION — Frontseat unit service valves. Relieve refrigerant pressure from tubing. Clean and flux around leak. Repair, using low-temperature (430 F) solder. Evacuate or purge evaporator coil and tubing system. Add refrigerant charge. Refer to Table 5.

Table 2 — AccuRater™ Selection Charts

OUTDOOR UNIT 38QH	INDOOR UNIT	INDOOR PISTON	OUTDOOR UNIT 38QH	INDOOR UNIT	INDOOR PISTON
015 (35)†	28AC015	49*	042 (73)†	28AC, AU042	80*
	28AC, AU018	49*		28AC242	80*
	28HQ, VQ024	48*		28AC, AU048	82*
	40AQ018	48*		28AC248	82*
	40AQ024	48*		28AM048	82*
018 (42)†	40DQ014	46*	048 (73)†	28HQ, VQ042	76*
	40DQ018	46*		28HQ, VQ048	80*
	40DQ024	49*		28HQ, VQ060	82*
	28AC, AU018	52*		28SL042	76*
	28AC, AU, AM024	55*		28SL048	80*
024 (52)†	28HQ, VQ024	52*	060331 (78)†	28SL060	82*
	28HQ, VQ030	55*		40QB042	80*
	40AQ018	49*		40QB, QH048	82*
	40AQ024	52*		28AC, AU048	84*
	40DQ024	55*		28AC248	84*
030 (59)†	40AQ030	55*	060341 (78)†	28AC, AU060	93*
	40DQ018	49*		28AC260	93*
	40DQ024	52*		28HQ, VQ060	90*
	40DQ030	55*		28SL060	90*
	28AC, AU, AM024	61*		40QB, QH060	93*
036 (61)†	28AC, AU030	70*		40QB, QH062	93*
	28AC, AU036	73*			
	28AC236	73*			
	28AM036	70*			
	28HQ, VQ030	67*			

*Replace factory-installed piston with this piston size
†Required outdoor piston size

Step 4 — Make Electrical Connections — Be sure field wiring complies with local and national fire, safety and electrical codes, and voltage to system is within limits shown in Table 3. Contact local power company for correction of improper line voltage.

NOTE: Operation of unit on improper line voltage constitutes abuse and could affect Carrier warranty. See

COMPATIBLE FITTING
CUT HERE

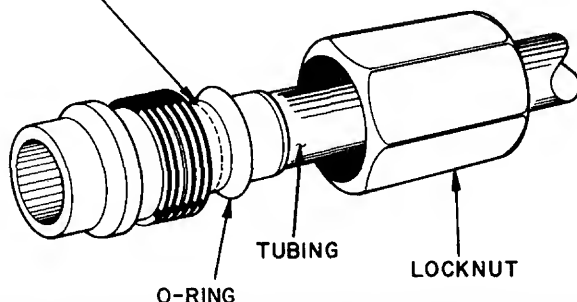


Fig. 3 — Compatible Fitting

Table 3. Do not install unit in system where voltage may fluctuate above or below permissible limits.

See Table 3 for recommended fuse sizes. When making electrical connections, provide clearance at unit for refrigerant piping connections.

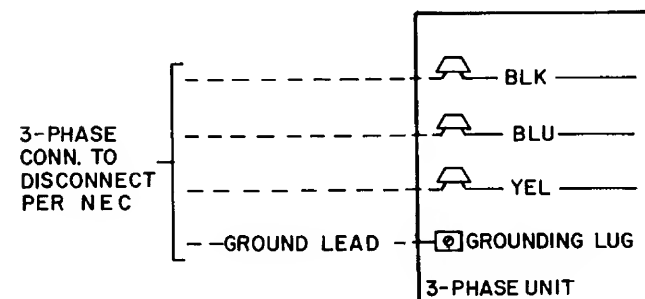
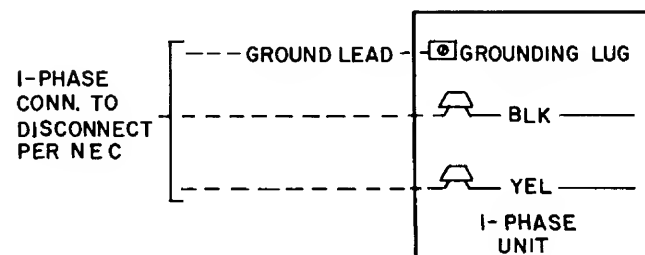
INSTALL BRANCH CIRCUIT DISCONNECT PER NEC of adequate size to handle unit starting current. Locate disconnect within sight from and readily accessible from unit, per Section 440-14 of National Electrical Code (NEC).

ROUTE LINE POWER LEADS — Extend leads from disconnect through power wiring hole provided (see Fig. 1) and into unit splice area. Remove control box cover to gain access to unit wiring.

CONNECT GROUND LEAD AND POWER WIRING — Connect ground lead to ground connection in control box for safety. Then connect power wiring. See Fig. 4. Splice line power leads to yellow and black pigtails. Use wire nuts and tape at each connection. Connect unit wiring to copper power wiring only.

CONNECT CONTROL POWER WIRING — Route 24-v control wires through control wiring hole and channel and connect leads to control wiring terminal board. See Fig. 1 and 5.

Use furnace or fan coil transformer as 24-v (40-va minimum) supply for system as shown in Fig. 5, or use accessory transformer (refer to Service data).



Splice Connections
Field Wiring
Factory Wiring

Fig. 4 — Line Power Connections

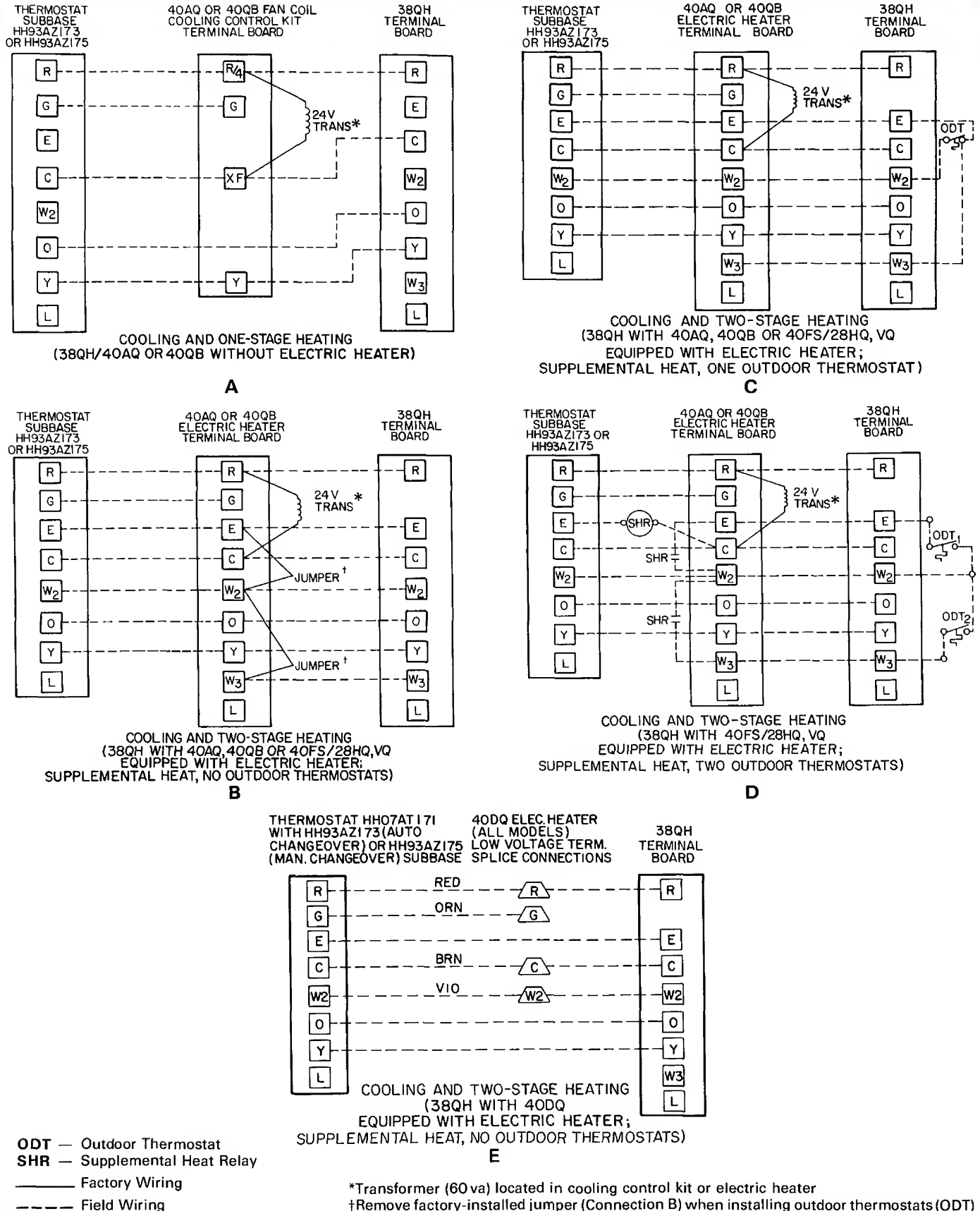


Fig. 5 — Control Circuit Connections

→ **Table 3 — Electrical Data (60 Hz)**
3-Phase Available with 030-060 Sizes (SM, DL Option Models)

OUTDOOR UNIT 38QH	V/PH	OPER VOLTS*		COMPR		FAN FLA	BRANCH CIRCUIT	
		Max	Min	LRA	RLA		MCA	Max Fuse† or HACR Type Ckt Bkr Amps
015301	208/230/1	254	187	35	7 1	7	8 6	15
018301				50	8 0	7	12 3	20
024301				54	12 9	9	15 3	25
030301				78	14 5	9	20 3	35
036301				86 7	14 9	9	21 3	35
042301				107 4	18 3	19	27 3	45
048301				110	20 4	19	29 9	50
060331				130	25 9	19	34 3	60
060341				142	31 2	19	40 9	60
030501	208-230/3‡	245	187	59.5	10 6	.9	15 4	25
036501				65	11.5	.9	16 5	25
042501				74	13 3	9	19 1	30
048501				92	14 7	19	20 9	35
060531				Not Available				
036601	460/3‡	506	414	32 8	5 1	1 1	7.5	15
042601				37	6 2	1.3	9 1	15
048601				46	7 0	1 3	10.1	15
060631				Not Available				

FLA — Full Load Amps
HACR — Heating, Air Conditioning, Refrigeration
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
RLA — Rated Load Amps

*Permissible limits of the voltage range at which unit will operate satisfactorily
†Time-delay fuse.

‡3-Phase available only with Deluxe and SM option units.

NOTE: Control circuit is 24 v on all units and requires external power source.

⚠ WARNING

To avoid personal injury, be sure indoor blower has stopped before attempting service or maintenance.

Heat Anticipator Settings for Room Thermostat (HH01AT171) — Set anticipator for room thermostat according to Table 4. These settings may be changed slightly to provide a greater degree of comfort for a particular installation.

Accessory Outdoor Thermostat provides adjustable outdoor control of accessory electric heater. This thermostat makes contact when a drop in outdoor temperature occurs. It energizes a stage of electric heat when the outdoor temperature setting is reached, provided the room thermostat is on the second stage of heating. One outdoor thermostat is recommended for each stage of electric heat after the first stage. Set the outdoor thermostat(s) progressively lower for each stage. Refer to heat load of building and unit capacity to determine the correct outdoor thermostat settings.

The accessory supplemental heat relay is required when 2 outdoor thermostats are used. It is automatically energized by the manually operated supplemental heat switch in the indoor thermostat subbase. The thermostat locks out compressor and the relay bypasses the outdoor thermostats for electric heater operation during heat

pump shutdown. When one outdoor thermostat is used, a supplemental heat relay is not required. The supplemental heat switch in the indoor thermostat subbase bypasses outdoor thermostat, locks out compressor and activates electric heater.

MOUNT OUTDOOR THERMOSTAT in control box.

Attach brackets with short sheet metal screws to avoid contact with coil. Leave capillary tube coiled in control compartment making sure it is clear of all electrical connections and sharp metal edges.

MOUNT SUPPLEMENTAL HEAT RELAY in convenient location on indoor unit. Attach with sheet metal screw.

Table 4 — Thermostat Anticipator Settings

UNIT 38QH	FIRST- STAGE ANTICIPATOR SETTING	INDOOR UNIT WITH ELECTRIC HEATER	HTR kW	SECOND- STAGE ANTICIPATOR SETTINGS
015 018 024 030 036 042 048 060	Fixed	40DQ and 40AQ Fan Coil with 40AQ Htrs or 40QB Fan Coil with 40QB Htrs	5 0 7 5 10.0	25
			15 0 20 0 25.0	
			30 0 34.0	
				50

Step 5 — Start-Up

1. Energize crankcase heater a minimum of 24 hours before starting unit. To energize heater only, set thermostat at OFF position and close electrical disconnect to outdoor unit.
2. Turn on main disconnect switch(es) to indoor and outdoor units.
3. Set fan switch as desired (ON or AUTO.).
4. Set thermostat dial at desired temperature.
5. Set selector switch at HEAT or COOL. Operate unit for 15 minutes.
6. Check system refrigerant charge. Refer to Table 5.

Motors and controls are designed to operate satisfactorily in the voltage range shown in Table 3. If necessary to use manifold gages for servicing, refer to Carrier Standard Service Techniques Manual, Chapter 1, Refrigerants, Page 1-5, Fig. 8 for bypass method of returning charge to system. Removal of liquid line charging hose without following these precautions could result in some loss of charge.

Refrigerant Charging (See Fig. 6-21)

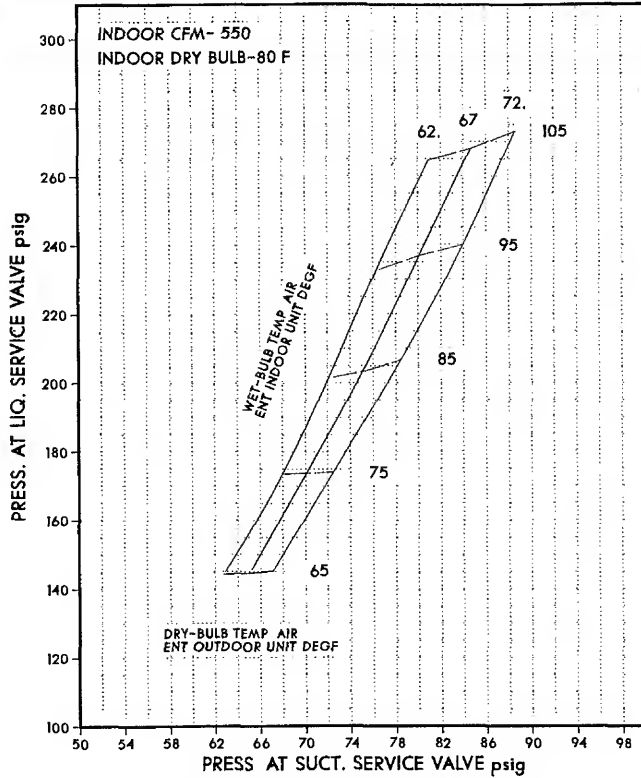
⚠ CAUTION

To prevent personal injury, wear safety glasses and gloves when handling refrigerant. Do not overcharge system. This can cause compressor flooding.

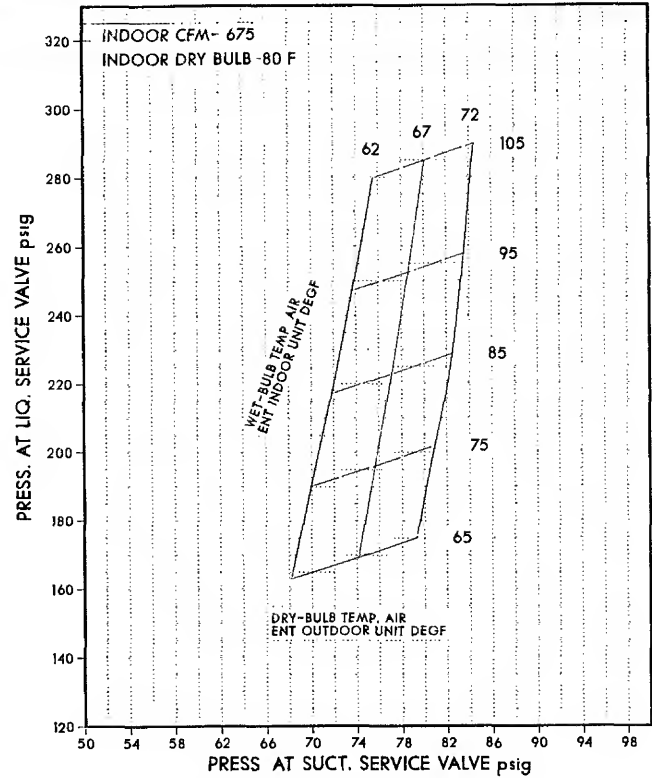
→ Table 5 — Service Data

MODEL 38QH	COMPR*	OIL CHG (oz)		R-22 Chg* (lb)	OUTDOOR FAN RPM
		Initial	Recharge		
015	REZ3-0125-PFV	24	20	5.3	815
018	H22B173ABCA	40	37	5.5	815
024	CRC2-0175-PFV	55	52	7.8	850
030	AV5532E	54	50	7.8	850
036	AV5535H	54	50	7.9	850
042	AV5542H	54	50	11.0	840
048	AV5546H	54	50	12.5	840
060	WD60000AA	76	74	14.1	840
060341	H23A563ABCA	55	50	14.0	840
030	AV5532E	54	50	7.8	850
036	AV5535E	54	50	7.9	850
042	AV5542E	54	50	11.0	840
048	AV5546E	54	50	12.5	840
060	WY6000AA	76	74	14.1	840
036	AV5535E	54	50	7.9	850
042	AV5542E	54	50	11.0	840
048	AV5546E	54	50	12.5	840
060	WH6000AA	76	74	14.1	840

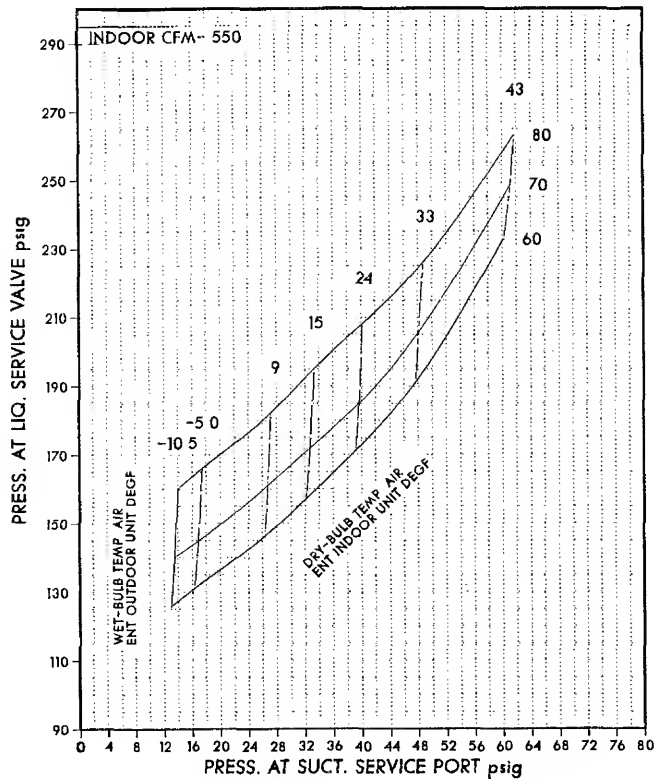
*Factory refrigerant charge is adequate when indoor unit and outdoor unit are the same size and are connected with 25 ft or less of field-tubing of recommended size or Carrier accessory tubing



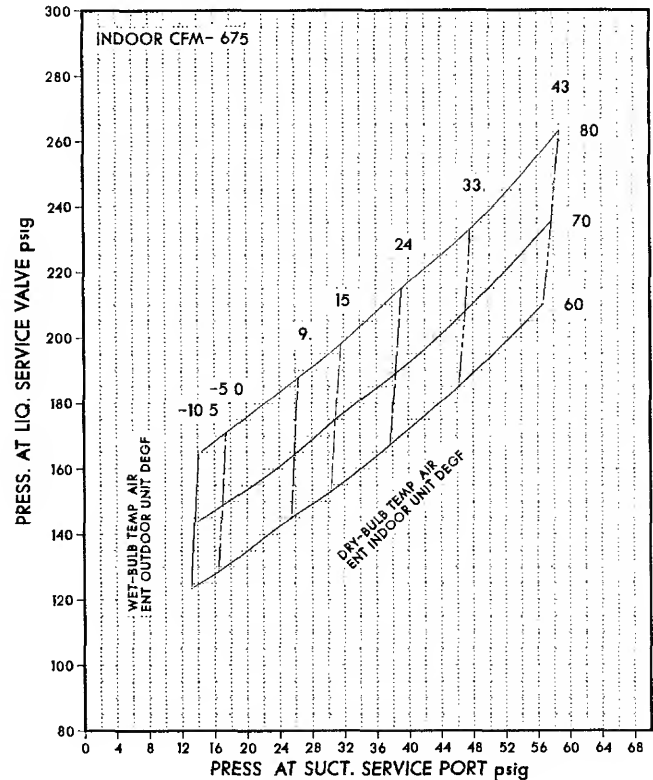
**Fig. 6 — 38QH015 with Table 2 Combinations
Cooling Cycle Charging Chart**



**Fig. 8 — 38QH018 with Table 2 Combinations
Cooling Cycle Charging Chart**



**Fig. 7 — 38QH015 with Table 2 Combinations
Heating Cycle Check Chart**



**Fig. 9 — 38QH018 with Table 2 Combinations
Heating Cycle Check Chart**

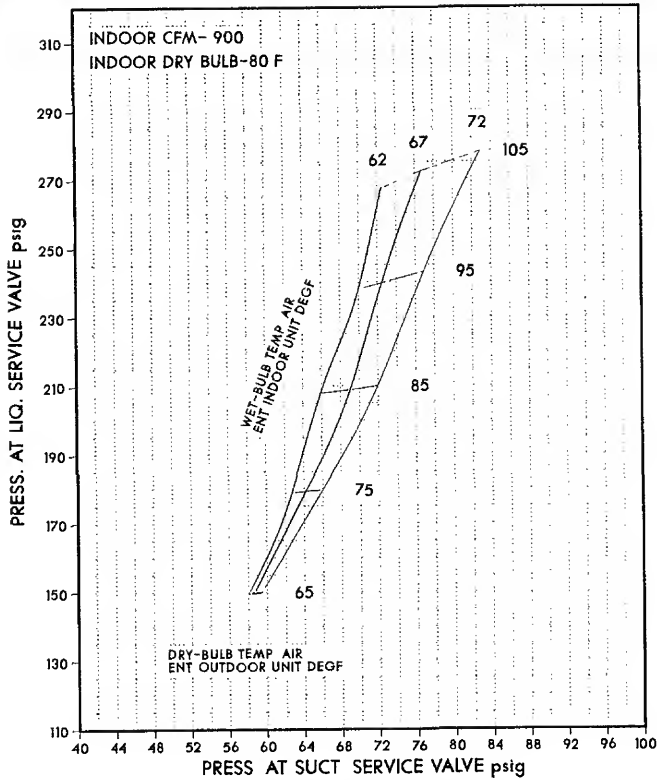


Fig. 10 — 38QH024 with Table 2 Combinations Cooling Cycle Charging Chart

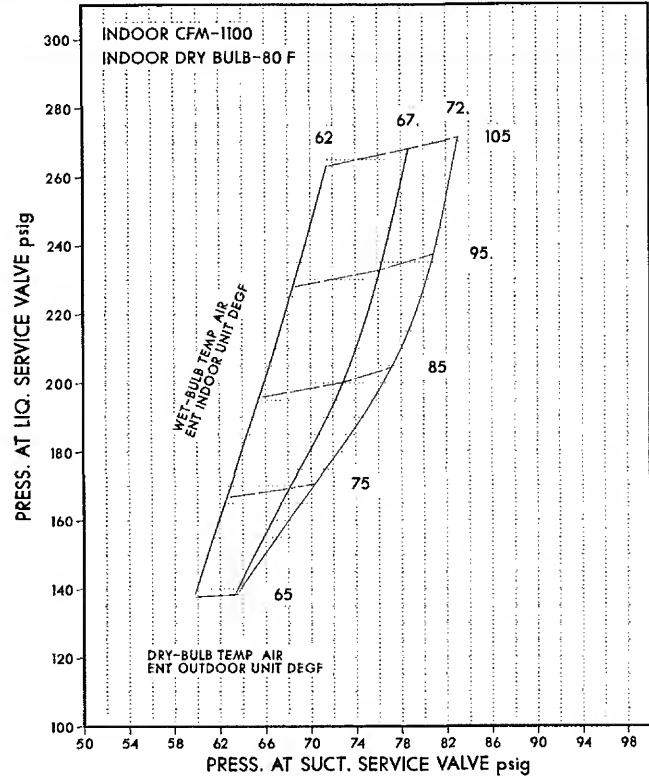


Fig. 12 — 38QH030 with Table 2 Combinations Cooling Cycle Charging Chart

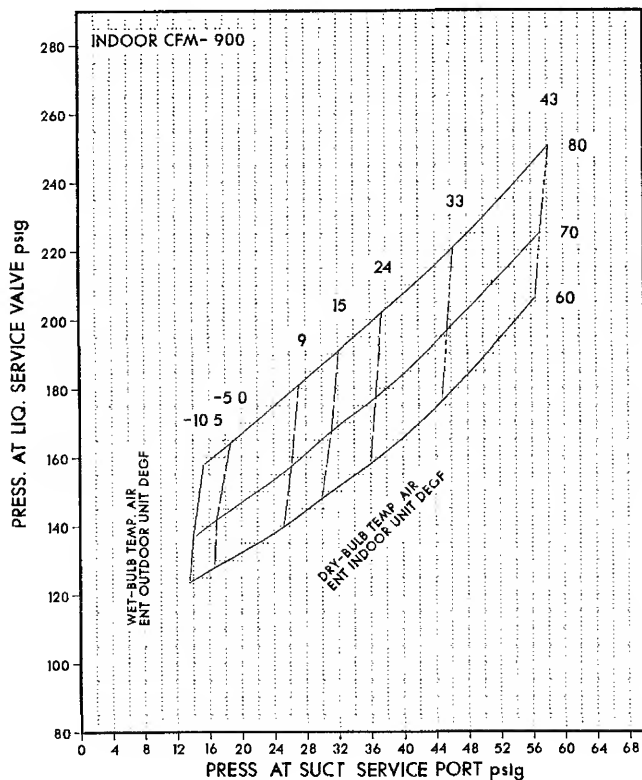


Fig. 11 — 38QH024 with Table 2 Combinations Heating Cycle Check Chart

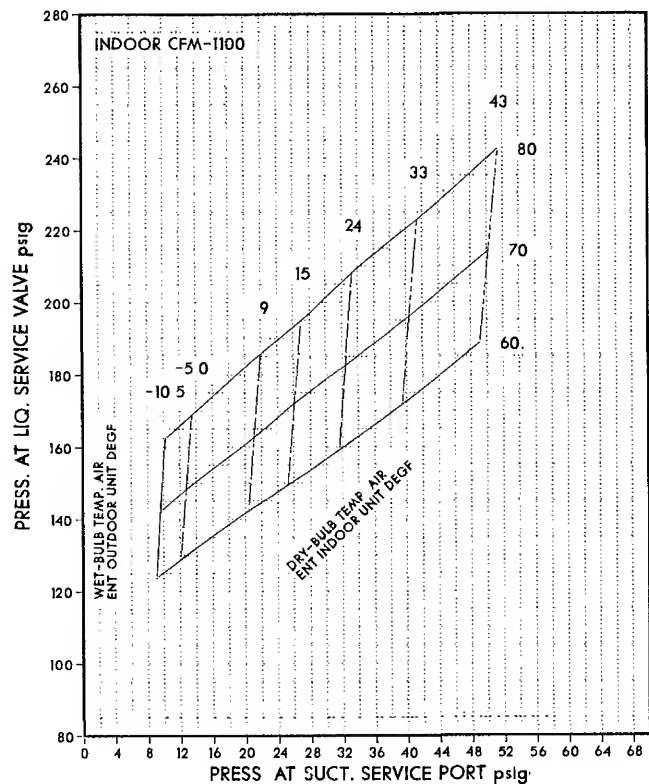


Fig. 13 — 38QH030 with Table 2 Combinations Heating Cycle Check Chart

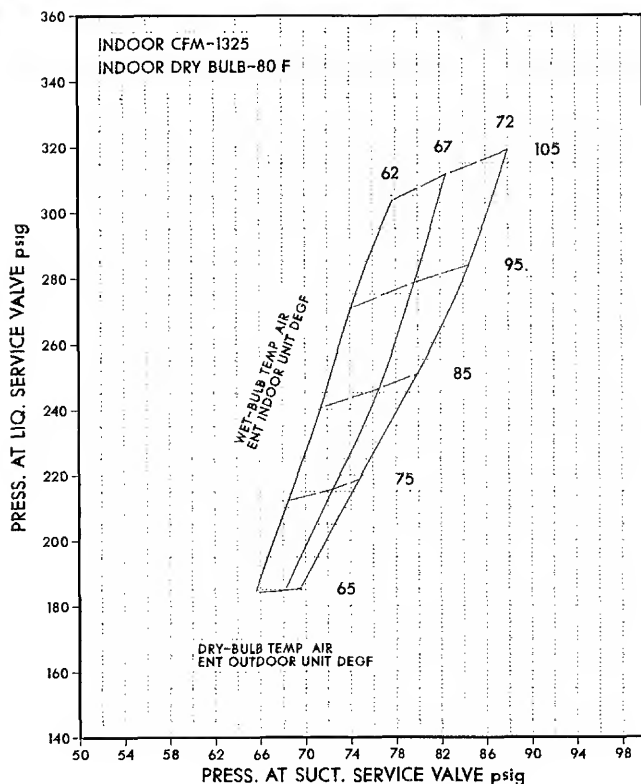


Fig. 14 — 38QH036 with Table 2 Combinations Cooling Cycle Charging Chart

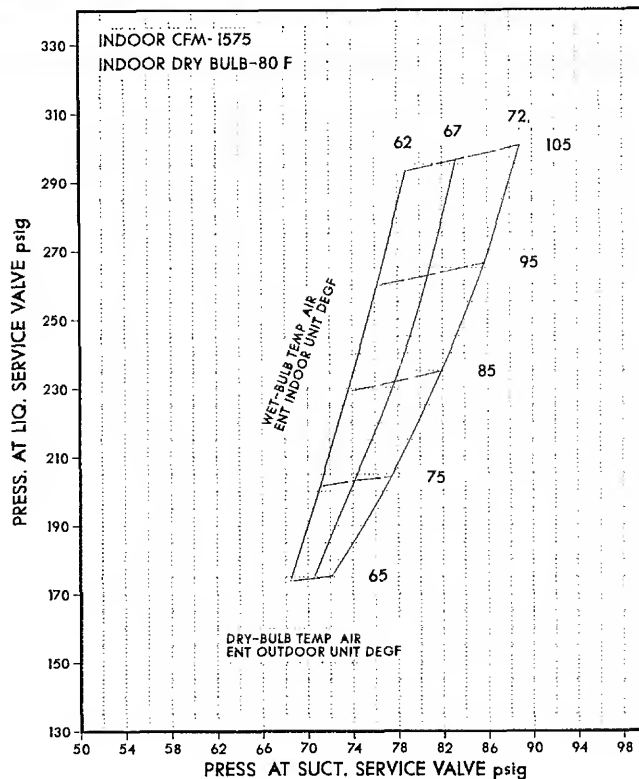


Fig. 16 — 38QH042 with Table 2 Combinations Cooling Cycle Charging Chart

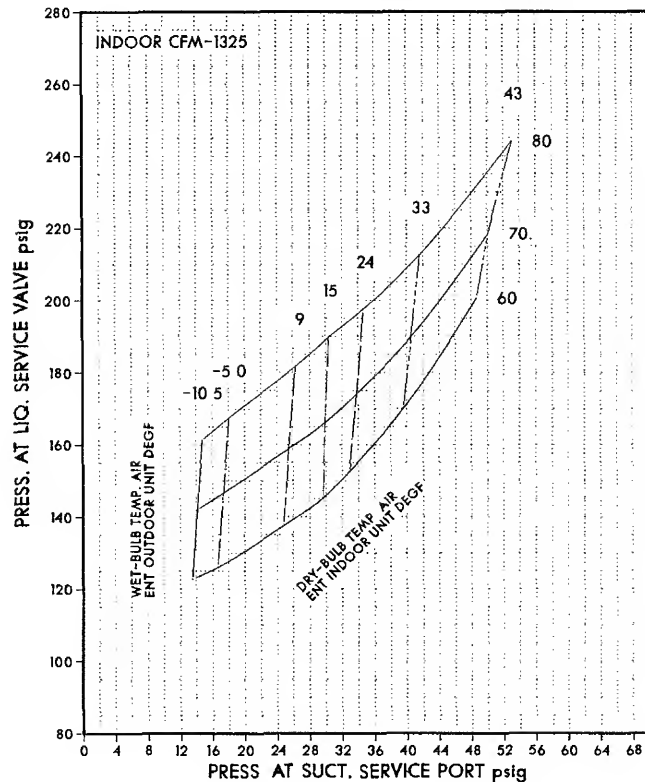


Fig. 15 — 38QH036 with Table 2 Combinations Heating Cycle Check Chart

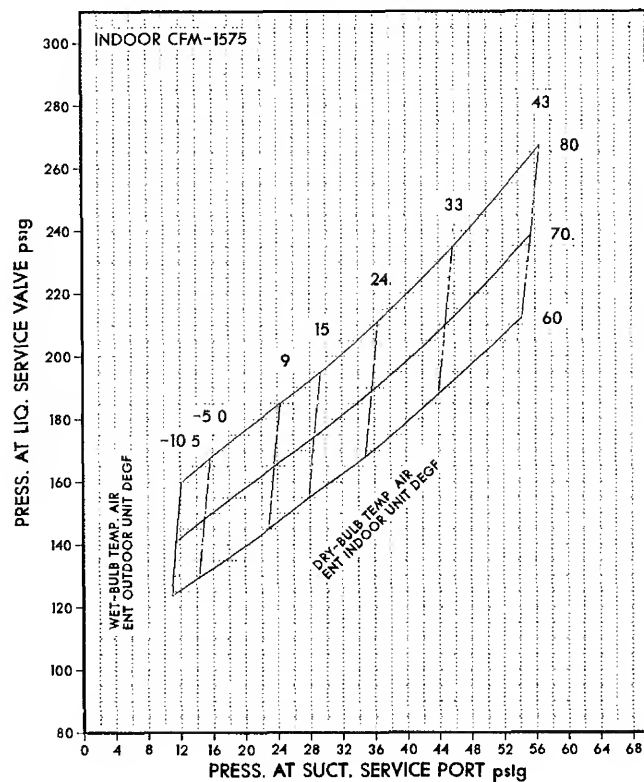


Fig. 17 — 38QH042 with Table 2 Combinations Heating Cycle Check Chart

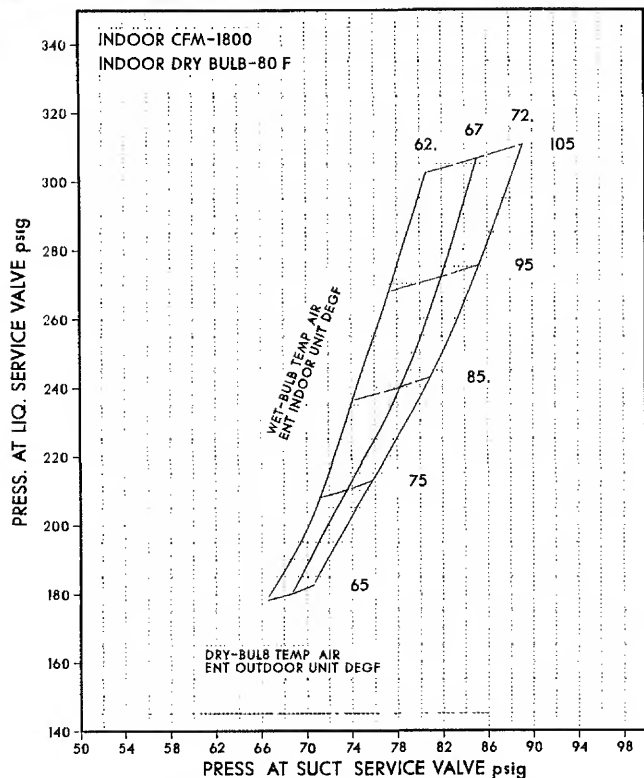
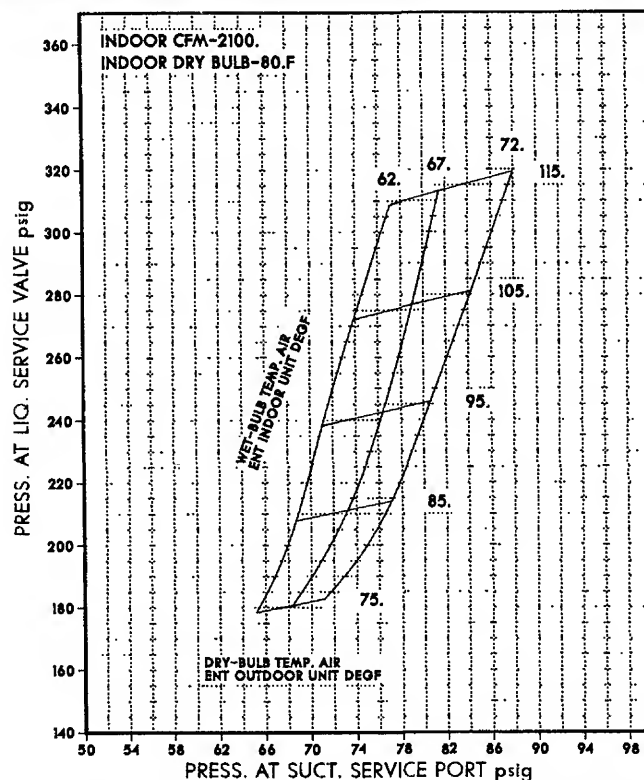


Fig. 18 — 38QH048 with Table 2 Combinations Cooling Cycle Charging Chart



→ Fig. 20 — 38QH060 with Table 2 Combinations Cooling Cycle Charging Chart

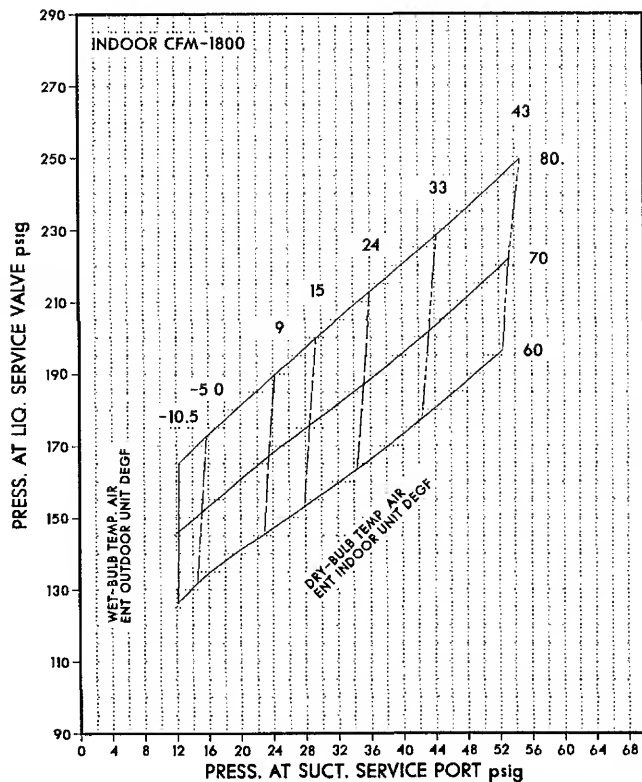
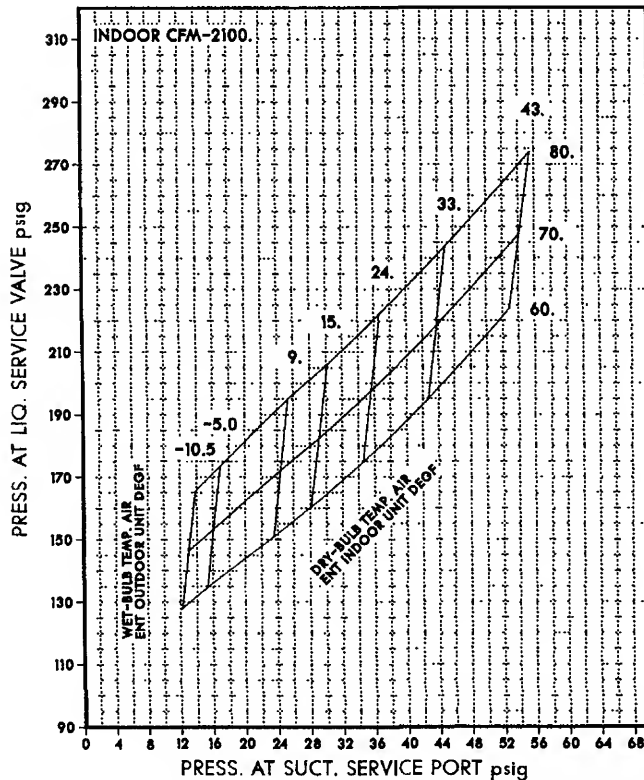


Fig. 19 — 38QH048 with Table 2 Combinations Heating Cycle Check Chart



→ Fig. 21 — 38QH060 with Table 2 Combinations Heating Cycle Check Chart